

PATENT CLAIMS

1. A combined fluid-air evaporator having at least two separate duct systems, through which separate material flows may be directed,

wherein at least one of the two duct systems has a free surface which may be brought into thermal contact with a directed air flow, and the at least two duct systems are at least partially in thermal contact with one another.

2. The combined fluid-air evaporator according to claim 1,

characterized in that the at least two duct systems are implemented in the form of a first pipeline (10) having a first pipe internal diameter d_1 , in whose pipe interior a second pipeline (11), having a second pipe internal diameter d_2 , with $d_2 < d_1$, is provided, the first duct system being delimited by the second pipeline (11) and the second duct system being delimited by the first and second pipeline, and the first pipeline having a free pipe outside.

3. The combined fluid-air evaporator according to claim 2,

characterized in that lamellar plane elements (9) are attached to the pipe outside of the first pipeline (10).

4. The combined fluid-air evaporator according to claim 1,

characterized in that the at least two duct systems are implemented in the form of a shared pipeline, the pipeline having a pipe surface, and the pipeline has at least one internal partition wall, which divides the volume enclosed by the

pipeline into at least two separate pipeline longitudinal parts and via which the at least two pipeline longitudinal parts are in thermal contact with one another.

5. The combined fluid-air evaporator according to claim 4,

characterized in that lamellar plane elements (9) are attached to the pipe surface and/or are in thermal contact therewith.

6. A use of the combined fluid-air evaporator according to one of claims 1 through 5 as a refrigerant evaporator,

characterized in that a refrigerant is conducted through one duct system and an exothermic fluid, preferably a liquid, is conducted through the other duct system, and

the refrigerant comes into thermal contact both with the exothermic fluid and also with an air flow coming into contact with the free surface of the duct system.

7. A use of the combined fluid-air evaporator according to one of claims 2 or 3 as a refrigerant evaporator,

characterized in that an exothermic fluid is conducted through the first duct system, and

a refrigerant is conducted through the second duct system.

8. The use according to claim 6 or 7,

characterized in that the refrigerant evaporator is part of a heat pump.

9. A ventilation arrangement for a building having heat absorption from a used air flow (UAF) directed out of the building, which comes into thermal contact with an outside air flow (OAF) via an air-air heat exchanger (AAH) and is in thermal contact with a combined fluid-air evaporator (2) according to one of claims 1 through 5, through which a refrigerant and an exothermic fluid pass, the refrigerant circulating in the loop of a heat pump (6).
10. The ventilation arrangement according to claim 9, characterized in that the heat pump (6) has a condenser (3), which is connected downstream from the air-air heat exchanger (AAH) in the flow direction in the heated outside air flow (OAF), and the exothermic fluid circulates in the loop of a heat accumulator system, and
an intake air flow (IAF), which is directed into the building, arises downstream in the flow direction from the condenser (3).
11. The ventilation arrangement according to claim 9 or 10, characterized in that a first valve unit (A), through which the circulation of the fluid through the heat accumulator system may be regulated, is provided in the loop of the heat accumulator system.
12. The ventilation arrangement according to one of claims 9 through 11, characterized in that a fluid-air heat exchanger (1), which may be permeated by the fluid circulating in the loop of the heat accumulator system, is provided in

the outside air flow (OAF) in the flow direction before the air-air heat exchanger (AAH).

13. The ventilation arrangement according to claim 12, characterized in that a second valve unit (B), through which the inflow of the fluid to the fluid-air heat exchanger (1) may be regulated, is provided in the loop of the heat accumulator system.
14. The ventilation arrangement according to one of claims 9 through 13, characterized in that an industrial water accumulator (5), which is thermally coupled to the heat pump (6), is provided in parallel or in series to the condenser (3).
15. The ventilation arrangement according to one of claims 9 through 14, characterized in that the heat accumulator system has a geothermal collector (8), aerothermal collector, and/or a hydrothermal collector.
16. The ventilation arrangement according to one of claims 9 through 15, characterized in that a solar collector (14) is provided, which is permeated by a collector flow that may be connected to the fluid-air heat exchanger (1) and/or the combined fluid-air evaporator (2) alternatively or in combination with the fluid circulating in the loop of the heat accumulator system.

17. The ventilation arrangement according to one of claims 9 through 16,

characterized in that a third valve unit (C), through which the inflow of the combined fluid-air evaporator (2) may be regulated, is provided in the loop of the heat accumulator system.

18. The ventilation arrangement according to one of claims 11, 13, or 17,

characterized in that the valve unit is a three-way valve.

19. The ventilation arrangement according to one of claims 9 through 18,

characterized in that a flow deflection unit (12) is provided in the flow direction upstream from the combined fluid-air evaporator (2), which may be switched into at least two positions, a first position in which the entire used air flow (UAF) permeates the combined fluid-air evaporator (2), and a second position, in which the entire used air flow (UAF) is conducted past the combined fluid-air evaporator (2) through a bypass channel as an exhaust air flow (EAF).

20. The ventilation arrangement according to one of claims 9 through 18,

characterized in that a flow deflection unit (12) is provided connected upstream in the flow direction from the combined fluid-air evaporator (2), which conducts the used air flow in a variably adjustable or a fixed predefined quantity ratio through the combined fluid-air evaporator (2) and/or through a bypass channel past the combined fluid-air evaporator (2).

21. The ventilation arrangement according to claim 19 or 20,

characterized in that the flow deflection unit (12) is implemented as a flow flap.

22. The ventilation arrangement according to claim 19 or 20,

characterized in that the flow deflection unit (12) is implemented as a valve.

23. The ventilation arrangement according to one of claims 12 through 22,

characterized in that the heat pump (6) provides an expanded refrigerant loop (15), which is thermally coupled to the fluid-air heat exchanger (1).